What is claimed is:

1. A system for avoiding hypoxemia in at least one subject exposed to a reduced atmospheric pressure, the system comprising:

an air source to supply an oxygen mixture to at least one subject;

a microprocessor being configured to determine an increased risk of hypoxemia in the at least one subject and atmospheric conditions corresponding to hypoxemia in the at least one subject, the microprocessor activating the air source to provide the oxygen mixture to the at least one subject in response to a determination of the increased risk of hypoxemia or atmospheric conditions corresponding to the increased risk of hypoxemia in the at least one subject;

a first sensor to measure at least one physiological characteristic of the at least one subject, the first sensor transmitting a first signal to the microprocessor with the at least one physiological characteristic of the at least one subject;

wherein the microprocessor determines the increased risk of hypoxemia in the at least one subject by comparing the at least one physiological characteristic of the at least one subject with a predetermined value for the at least one physiological characteristic of the at least one subject, the microprocessor determining the increased risk of hypoxemia in response to the at least one physiological characteristic of the at least one subject being less than the predetermined value for the at least one physiological characteristic.

2. The system of claim 1 wherein the at least one physiological characteristic is an oxygen red cell saturation level for arterial circulation.

3. The system of claim 2 wherein the predetermined value for the oxygen red cell saturation level is about 91 percent.

4. The system of claim 1 wherein the system is portable.

5. The system of claim 1 wherein the system is for use in an aircraft.

6. The system of claim 5 further comprising a first time reference measured from an instant the oxygen mixture is first being provided to the at least one subject, the at least one subject being required to perform an affirmative act to reset the first time reference, the first time reference being compared to a second predetermined period of time, wherein in response to the first time reference exceeding the second predetermined period of time, emergency procedures are initiated.

7. The system of claim 6 wherein the emergency procedures include transmitting an automatic emergency message to a pre-programmed airport tower.

8. The system of claim 6 wherein the emergency procedures include decreasing the aircraft altitude.

9. The system of claim 1 wherein the system is for use in an aircraft having an unpressurized cabin.

10. The system of claim 4 wherein the system is substantially incorporated within a single container.

11. The system of claim 1 further comprising a second sensor to measure at least one atmospheric pressure of an area surrounding the at least one subject, the second sensor transmitting a second signal to the microprocessor with the at least one atmospheric pressure of an area surrounding the at least one subject, wherein the at least one physiological characteristic measurement and the at least one atmospheric pressure measurement are measured at substantially the same instant in time.

12. The system of claim 11 wherein the at least one atmospheric pressure is measured pressure altitude in lineal units mean sea level.

13. The system of claim 11 wherein the at least one atmospheric pressure is measured pressure altitude in lineal units density altitude.

14. The system of claim 11 further comprising a storage device having at least one previously stored physiological characteristic measurement and an atmospheric pressure measurement measured at substantially the same instant of time as the at

least one stored physiological characteristic measurement of the at least one subject, the storage device transmitting a third signal to the microprocessor, the microprocessor determining atmospheric conditions corresponding to the increased risk of hypoxemia by comparing the atmospheric pressure measurement of the at least one previously stored physiological characteristic measurement with the at least one atmospheric pressure of the area surrounding the at least one subject, and the microproccesor determining atmospheric conditions corresponding to hypoxemia in response to the atmospheric pressure measurement of the at least one previously stored physiological characteristic measurement exceeding the at least one atmospheric pressure of the area surrounding the at least one subject.

15. The system of claim 1 wherein the microprocessor is remote from the at least one subject.

16. The system of claim 14 wherein the storage device is remote from the at least one subject.

17. The system of claim 1 further comprising a warning device for providing at least one warning message to the at least one subject in response to receiving a signal from the microprocessor.

18. The system of claim 17 wherein the at least one warning message is a signal in the form of an audio signal, a visual signal, a signal convertible to provide a tactile sensation or any combination thereof for the at least one subject.

19. The system of claim 1 further comprising a first time reference measured from the instant the oxygen mixture is provided to the at least one subject, the at least one subject being required to perform an affirmative act to reset the first time reference, the first time reference being compared to a second predetermined period of time, wherein in response to the first time reference exceeding the second predetermined period of time, emergency procedures are initiated.

20. A method for avoiding hypoxemia in at least one subject exposed to a reduced atmospheric pressure, the steps comprising:

measuring at least one physiological characteristic of the at least one subject with a first sensor;

transmitting a first signal corresponding to the at least one physiological characteristic from the first sensor to a logic device;

comparing the first signal to a first predetermined value for the at least one physiological characteristic of the at least one subject with the logic device to determine an increased risk of hypoxemia in the at least one subject; and

providing the oxygen mixture from the air source to the at least one subject in response to the first signal being less than the first predetermined value.

21. The method of claim 20 further comprising the steps:

providing at least one previously measured atmospheric pressure of an area surrounding the at least one subject wherein the at least one previously measured atmospheric pressure having a corresponding previously measured at least one physiological characteristic of the at least one subject, the at least one previously measured atmospheric pressure of the area surrounding the at least one subject and the at least one previously measured at least one physiological characteristic of the at least one subject being taken at substantially the same instant of time, and being stored on a storage device;

transmitting a third signal corresponding to the at least one previously measured atmospheric pressure of the area surrounding the at least one subject from the storage device to the logic device;

comparing the third signal to the at least one previously measured atmospheric pressure of the area surrounding the at least one subject;

determining with the logic device atmospheric conditions corresponding to the increased risk of hypoxemia in response to the at least one previously measured atmospheric pressure of the area surrounding the at least one subject from the storage device exceeding the at least one atmospheric pressure of the area surrounding the at least one subject.

22. The method of claim 20 further comprising the step of measuring at least one atmospheric pressure of an area surrounding the at least one subject with a second sensor, wherein the step of measuring the at least one atmospheric pressure of an area surrounding the at least one subject and the step of measuring the at least one physiological characteristic of the at least one subject with a first sensor are performed at substantially the same instant of time.

23. The method of claim 22 wherein the measurement of the at least one atmospheric pressure is a pressure altitude measured in lineal units mean sea level.

24. The method of claim 22 wherein the measurement of the at least one atmospheric pressure is measured in lineal units density altitude.

25. The method of claim 20 wherein the measurement of the at least one physiological characteristic of the at least one subject is an oxygen red cell saturation level for arterial circulation.

26. The method of claim 20 wherein the first predetermined value for the at least one physiological characteristic of the at least one subject is an oxygen red cell saturation level for arterial circulation is about 91 percent.

27. A system for avoiding hypoxemia in at least one subject exposed to a reduced atmospheric pressure, the system comprising:

an air source to supply an oxygen mixture to at least one subject;

a microprocessor being configured to determine an increased risk of hypoxemia in the at least one subject and atmospheric conditions corresponding to the increased risk of hypoxemia in the at least one subject and to control the air source to provide the oxygen mixture to the at least one subject in response to the determination of the increased risk of hypoxemia in the at least one subject;

a pulse oximeter to measure at least one oxygen red cell saturation level for arterial circulation of the at least one subject, the pulse oximeter transmitting a first signal to the microprocessor with the at least one oxygen red cell saturation level for arterial circulation of the at least one subject;

wherein the microprocessor determines the increased risk of hypoxemia in the at least one subject by comparing the at least one oxygen red cell saturation level for arterial circulation of the at least one subject with a predetermined value of about 91 percent for the at least one oxygen red cell saturation level for arterial circulation of the at least one subject, the microprocessor determining the increased risk of hypoxemia in response to the at least one oxygen red cell saturation level for arterial circulation of the at least one subject being greater than the predetermined value for the at least one oxygen red cell saturation level for arterial circulation.

28. A device for performing oxygen flight planning calculations for at least one subject for estimating oxygen usage comprising:

a storage device;

an input device for inputting at least one known flight parameter value into the storage device;

an output device for outputting the at least one known flight parameter value input by the input device;

a logic device configured to control the storage device, the input device, the output device and provide to the output device at least one further flight parameter, a value of the at least one further flight parameter being calculable by the logic device from the at least one known flight parameter value previously input into the storage device;

wherein upon the at least one further flight parameter being selected by use of the input device, the logic device calculating the value of the at least one further flight parameter and providing the value of the at least one further flight parameter to the output device.

29. The device of claim 28 wherein the output device may be used to select the at least one further flight parameter displayed by the output device.

30. The device of claim 28 wherein the at least one further flight parameter being provided from at least one personal flight data value of the at least one subject, the at least one personal flight data value corresponding to an atmospheric condition of an

area surrounding the at least one subject, the atmospheric condition corresponding to an increased risk of hypoxemia in the at least one subject, hypoxemia being determined in the at least one subject by comparing at least one physiological characteristic of the at least one subject with a predetermined value.

31. The device of claim 28 wherein the at least one further flight parameter being provided from at least one estimated personal flight data value of the at least one subject, the at least one estimated personal flight data value corresponding to an atmospheric condition of an area surrounding the at least one subject, the atmospheric condition corresponding to the increased risk of hypoxemia in the at least one subject, the increased risk of hypoxemia being determined in the at least one subject by comparing at least one physiological characteristic of the at least one subject with a predetermined value.

32. The device of claim 31 wherein the at least one estimated personal flight data value of the at least one subject is provided by inputting the at least one estimated personal flight data value by the input device.

33. The device of claim 31 wherein the at least one estimated personal flight data value of the at least one subject is provided by the logic device.

34. The device of claim 32 wherein the at least one estimated personal flight data value of the at least one subject provided by the logic device is based at least in part by at least one query about at least one physical characteristic of the at least one subject, a response to the at least one query being input by the input device.

35. The device of claim 28 further comprising an interface for connection to a storage medium therewith, the information contained on the storage medium being transferable to the storage device by the interface.

36. The device of claim 35 wherein information contained on the storage device being transferable to the storage medium by the interface.

37. The device of claim 28 further comprising an antenna associated with the logic device for receiving signals from at least one sensor.

38. The device of claim 28 further comprising an antenna associated with the logic device for receiving signals containing flight parameters from at least one remote location.

39. The device of claim 28 further comprising a communication connection between an aircraft computer and the logic device, the communication connection permitting the logic device to receive signals from the aircraft computer.

40. The device of claim 28 wherein the device is hand held.

41. The device of claim 28 further comprising at least one sensor inside the device wherein the at least one sensor is configured to measure a pressure surrounding the device and the temperature surrounding the device.

42. The device of claim 41 wherein the at least one sensor permits calculation of cabin density altitude.

43. A device for performing oxygen flight planning calculations for at least one subject for estimating oxygen usage comprising:

a logic device;

a storage device;

an input device for inputting at least one desired flight parameter into the storage device for calculation by the logic device of a value of the at least one desired flight parameter and for inputting a value of at least one known flight parameter into the storage device;

an output device for outputting the at least one desired flight parameter and the value of the at least one known flight parameter input by the input device;

the logic device configured to control the storage device, the input device, and the output device, the logic device determining and indicating on the output device at least one missing flight parameter required for calculation by the logic device of the value of the at least one desired flight parameter;

the logic device optionally providing a default value of the at least one missing flight parameter or permitting the input of a value of the at least one missing flight parameter into the storage device with the input device, the logic device then calculating the value of the at least one desired flight parameter from a combination of the value of the at least one known flight parameter input into the storage device, the value of the at least one missing flight parameter input into the storage device or the default value provided by the logic device of the at least one missing flight parameter.

44. The device of claim 43 further comprising at least one personal flight data value of the at least one subject being provided for input by the input device, the at least one personal flight data value corresponding to an atmospheric condition of an area surrounding the at least one subject, the atmospheric condition corresponding to an increased risk of hypoxemia in the at least one subject, the increased risk of hypoxemia being determined in the at least one subject by comparing at least one physiological characteristic of the at least one subject with a predetermined value.

45. The device of claim 43 wherein at least one estimated personal flight data value of the at least one subject being provided for input by the input device, the at least one estimated personal flight data value corresponding to an atmospheric condition of an area surrounding the at least one subject, the atmospheric condition corresponding to the increased risk of hypoxemia in the at least one subject, the increased risk of hypoxemia being determined in the at least one subject by comparing at least one physiological characteristic of the at least one subject with a predetermined value.

46. The device of claim 45 wherein the at least one estimated personal flight data value of the at least one subject is provided by the logic device.

47. The device of claim 46 wherein the at least one estimated personal flight data value of the at least one subject provided by the logic device is based at least in part by at least one query about at least one physical characteristic of the at least one subject, a response to the at least one query being input by the input device.

48. A method of calculating at least one oxygen flight planning parameter for a subject, the method comprising the steps of:

providing flight information related to at least one oxygen flight planning parameter;

selecting at least one oxygen flight planning parameter from a plurality of oxygen flight planning parameters;

calculating the selected at least one oxygen flight planning parameter using the provided flight planning information; and

displaying the calculated at least one oxygen flight planning parameter to the subject.

49. A method of selectably receiving calculable flight parameter values based on providing at least one known flight parameter, the calculable flight parameters being usable to estimate oxygen usage, the steps comprising:

inputting at least one known flight parameter;

outputting flight parameters calculable from the at least one known flight parameter;

displaying the calculable flight parameters;

selecting at least one calculable flight parameter;

calculating the selected at least one calculable flight parameter; and

displaying the selected at least one calculable flight parameter.

50. A method of receiving an estimated resultant flight parameter based on providing at least one estimated preliminary flight parameter, the calculable flight parameters being usable to estimate oxygen usage, the steps comprising:

inputting a resultant flight parameter for estimation thereof;

outputting at least one preliminary flight parameter usable for calculating the resultant flight parameter;

displaying the at least one preliminary flight parameter;

estimating the at least one preliminary flight parameter that is not known;

calculating the estimated resultant flight parameter; and

displaying the estimated resultant flight parameter.